

- P. Maximowiczii* Henry  $\times$  *P. laurifolia* Ledeb.  
*P. Maximowiczii* Henry  $\times$  *P. nigra* L.  
*P. Maximowiczii* Henry  $\times$  *P. tomentosa* Carr.  
*P. nigra* L. var. *italica* Muenchh.  $\times$   $\times$  *P. canadensis* Moench.  
*P. Sargentii* Dode  $\times$  *P. acuminata* Rydb.  
*P. Sargentii* Dode  $\times$  *P. deltoides* Marsh.  
*P. Tacamahaca* Mill.  $\times$   $\times$  *P. canadensis* Moench.  
*P. Tacamahaca* Mill.  $\times$  *P. deltoides* Marsh.  
*P. Tacamahaca* Mill.  $\times$  *P. nigra* L.  
*P. Tacamahaca* Mill.  $\times$  *P. nigra* L. var. *italica* Muenchh.  
*P. Tacamahaca* Mill.  $\times$  *P. Simonii* Carr.  
*P. tomentosa* Carr.  $\times$  *P. adenopoda* Maxim.  
*P. tomentosa* Carr.  $\times$  *P. alba* L. diploid  
*P. tomentosa* Carr.  $\times$  *P. alba* L. triploid

### **Ulmus L.**

- $\times$  *U. hollandica* Mill.  $\times$  *U. japonica* (Rehd.) Sarg.  
*U. Wilsoniana* Schneid.  $\times$  *U. japonica* (Rehd.) Sarg.

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A NOTE ON THE DATES OF ISSUE OF THE FASCICLES  
COMPRISING COSSON'S "ILLUSTRATIONES FLORAE  
ATLANTICAE" 1882-1897

E. D. MERRILL

As noted by Stearn\* in his comprehensive consideration of the dates of publication of this important two-volume work, the inclusive dates for volume one are 1882-1890 and for volume two 1893-1897, publication thus extending over a period of fifteen years. The only reason for the publication of this note is the fact that Stearns saw no fascicle covers, which carry the dates of publication and the inclusive pages and plates of each fascicle. A second set of the work was recently acquired by the Arnold Arboretum, this fortunately in its original fascicle covers. In our bound library set the fascicle covers are missing, and this seems to be the case in most libraries; the chief reason for their non-preservation, other than the earlier and unfortunately common practice of discarding such covers, is probably due to the fact that the covers are of rather heavy bristol board and thus were not adaptable to binding. The following data are taken directly from the original fascicle covers:

VOLUME I

	FASCICLE COVER DATES	STEARNS' DATES
Fasc. I, pp. 1-36, <i>t.</i> 1-25.	Sept., 1882	Oct. 10, 1882
Fasc. II, pp. 37-72, <i>t.</i> 26-50.	Aug., 1884	August, 1884
Fasc. III, pp. 73-120, <i>t.</i> 51-73.	Dec., 1888	Jan.-Feb., 1889
Fasc. IV, pp. 121-159, <i>t.</i> 74-98.	Oct., 1890	Jan. 10, 1891

VOLUME II

Fasc. V, pp. 7-42, <i>t.</i> 99-123.	Feb., 1892	April, 1892
Fasc. VI, pp. 43-82, <i>t.</i> 124-148.	Nov., 1893	Nov.-Dec., 1893
Fasc. VII, pp. 1-6, 83-125, <i>t.</i> 149-175.	May, 1897	July-Aug., 1897

\*STEARNS, W. T. Dates of publication of some floras of north-west Africa: Desfontaines' "Flora Atlantica," Cosson's "Compendium," Cosson and Baratte's "Illustrationes," Battander and Trabut's "Flore." Jour. Soc. Bibl. Nat. Hist. 1: 145-150. 1938.

While it is a well known fact that the printed dates on fascicle covers are not always the *exact* dates of issue, they are in general dependable. Here is a case where there is a rather remarkable agreement as to the dates of issue of the several parts as between the data taken directly from a set of the original fascicle covers and those derived from Stearn's critical search of records and reviews. For fascicle two the dates are the same by both methods, August, 1884; fascicles one, three and six are about one month earlier than the dates as derived by Stearn; fascicle five is at most two months earlier; and fascicles four and seven are between two and three months earlier.

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### STUDIES IN THE THEACEAE, VIII A SYNOPSIS OF THE GENUS FREZIERA

CLARENCE E. KOBUSKI

THERE has been considerable controversy over the name of this genus. By a vote of the committee of the International Rules of Botanical Nomenclature (1935), it was decided to conserve the name *Freziera*, in preference to *Eroteum* or *Lettsomia*.

The genus *Eroteum* was founded by Swartz (Prod. Veg. Ind. Occ. 85) in 1788 and two species, *E. theacoides* and *E. undulata* were described. Three years later, Swartz elaborated upon this earlier description (still under the name of *Eroteum*) in Schreber, Gen. Pl. (ed. 8) 2: 807. 1791. However, in his Fl. Ind. Occ. 2: 971. 1800, Swartz changed the name *Eroteum* to *Freziera* in honor of a botanist who travelled in South America. He maintained the same two species under the names, *F. "theoides"* and *F. undulata*.

Choisy (Mém. Soc. Phys. His. Nat. Genève, 14: 109–110. 1855) observed that two distinct generic elements were being included under the genus *Freziera* and that, of the two original species described by Swartz, the first, *F. theacoides* (generally considered the type) belonged to Thunberg's Asiatic genus, *Cleyera*; the second species, *F. undulata*, represented the true *Freziera*. All the other species in this complex, described by various authors up until this time, were generically placed by Choisy. Since the publication of the work of Choisy, most botanists have accepted the name *Freziera*, and up until 1893, the majority of species were described under this name.

In 1893, Szyszyłowicz, in his treatment of the Theaceae for Engler & Prantl's Nat. Pflanzenfam. combined *Ternstroemiopsis*, *Cleyera* and *Freziera* under the genus *Eurya* and designated them as sections. Urban protested vigorously (1896) and insisted that the four distinct entities

should be maintained as separate genera and as such has always treated his West Indian material. Still, in 1925, Melchior in the second edition of Engler & Prantl's *Nat. Pflanzenfam.* listed Szyszyłowicz's sections as subgenera. As a result of the works of Szyszyłowicz and later, of Melchior, the name *Eurya*, although belonging strictly to an Asiatic and Australasiatic genus, has been used by many botanists instead of *Eroteum*, *Lettsomia*, or *Freziera*.

Finally, thanks to a slight controversy between Sprague on one side and Fawcett and Rendle on the other side, the generic status, *Freziera* vs. *Eroteum*, was brought to the attention of the International Congress and by a vote of the committee the name *Freziera* was conserved relegating *Eroteum* and *Lettsomia* to synonymy.

In examining the relationship between *Freziera* and *Eurya* one cannot help being impressed, at first, by the similarity in the fruiting characters. The fruit are quite alike in appearance; both may have cell variation ranging from 3–4–5. However, the number of seeds differs in the two genera. In *Eurya* there are usually only 4–10 seeds in each locule while in *Freziera* the number per locule varies from 10–60. The flowers in *Eurya* are considerably smaller than those found in *Freziera* and offer slight characters for specific delimitation. In *Eurya*, the style is 3–4- or 5-parted according to the number of cells in the ovary. This partition of the style may vary from a slight separation at the apex to a complete separation to the base. The ovary is usually globose and contracts sharply at its juncture with the style. In *Freziera* the style is never parted and there is little constriction at the point of union with the ovary. The ovary is quite conic in shape and tapers evenly through an unparted style to the stigma. The petals in *Eurya* are imbricate, alternating with the sepals and are united for at least one-third their entire length. In *Freziera* the petals are usually free to the base, seldom united and if so, merely at the very base. In *Eurya*, the flowers are always dioecious; staminodia are seldom found in the pistillate flower and seldom are there signs of a vestigial ovary in the staminate flower. In *Freziera*, the flowers are dioecious or, as Urban puts it, gynodioecious. In the pistillate flower is found always a full series of staminodia. In the staminate flowers occurs a seemingly well developed ovary with distinct loculi and from gross appearance well developed ovules. Only a functioning stigma seems to be lacking. Urban maintains that this latter type of flower drops early from the branch, hence one does not know whether the ovary actually might function. It is these flowers which most students have in mind when they attribute hermaphroditic flowers to the genus. Urban infers that some species of *Freziera* may be hermaphro-

ditic. However, I have never found a single flower which I could definitely state as being such.

The persistent bracteoles at the base of the calyx-lobes in *Freziera* are extremely variable in the genus and play an important rôle in specific delimitation. In *Eurya*, these bracteoles are insignificant as characters. The leaves of all species in *Freziera* have "winged" petioles caused by a narrow continuation of the leaf-blade to the base of the petiole. This character is entirely lacking in all species of *Eurya*.

In addition to the material deposited in the herbarium of the Arnold Arboretum (AA), specimens from the Gray Herbarium (G), the Field Museum of Natural History (FM), the Missouri Botanical Garden (MO), the New York Botanical Garden (NY), and the United States National Museum (US) were used in this study.

***Freziera*** Swartz, Fl. Ind. Occ. 2: 971. 1800, in part; in Willdenow, Sp. Pl. 2<sup>a</sup>: 1179. 1800, in part.—Humboldt & Bonpland, Pl. Aequin. 1: 22. 1808.—De Candolle, Prodr. 1: 524. 1824, in part.—Endlicher, Gen. Pl. no. 5412. 1840.—Tulasne in Ann. Sci. Nat. sér. 3, 8: 326. 1847, in part.—Choisy in Mém. Soc. Phys. Hist. Nat. Genève, 14: 120 (Mém. Ternstroem. 32). 1855, emend.—Bentham & Hooker, Gen. Pl. 1: 183. 1862.—Triana & Planchon in Ann. Sci. Nat. sér. 4, 18: 261. 1862.—Wawra in Martius, Fl. Bras. 12<sup>1</sup>: 282. 1886.—Urban in Berichte Deutsch. Bot. Gesellsch. 14: 50. 1896; in Bot. Jahrb. 21: 541. 1896.—Fawcett & Rendle in Jour. Bot. 60: 362. 1922.—Sprague in Jour. Bot. 61: 85. 1923.—Internat. Rules Bot. Nomencl. ed. 3, 135. 1935.

*Eroteum* Swartz, Prodr. 85. 1788, in part; in Schreber, Gen. Pl. ed. 8, 2: 807. 1791, in part.—Baillon, Hist. Pl. 4: 256. 1873.

*Lettsomia* Ruiz & Pavon, Prodr. 77, t. 14. 1794.—De Candolle, Prodr. 1: 525. 1824.—Endlicher, Gen. Pl. no. 5413. 1840.—Choisy in Mém. Soc. Phys. Hist. Nat. Genève, 14: 123 (Mém. Ternstroem. 35). 1855.

*Eurya* § *Freziera* Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893.—Hieronymus in Bot. Jahrb. 20, Beibl. 49: 49. 1895.

*Eurya* subgenus *Freziera* Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, 21: 148. 1925.

Trees or rarely shrubs. Leaves coriaceous or occasionally membranaceous, usually lightly serrulate, occasionally subentire. Flowers dioecious or "gynodioecious," in fascicles in the leaf-axils or on abbreviated flowering branchlets. Bracteoles 2, opposite, at apex of peduncle, just beneath sepals. Sepals 5, imbricate, persistent, concave, the outer sepals varying from the inner sepals in size and texture. Petals 5, imbricate, alternating with sepals, unequal, usually free to the

base. Staminate flowers: stamens 15–30 uniseriate; filaments adnate to the base of the petals; anthers linear or ovate-elliptic, glabrous, usually dehiscent to the base. Ovary free, glabrous, 3- or 5-celled, rarely 4-celled, attenuated into an entire style; ovules many; stigma non-functioning. Pistillate flower: staminodia less in number than the stamens, adnate to base of the petals or attached to the disk. Ovary and style as in ♂ fl., stigma the same number of lobes as cells in the ovary. Fruit indehiscent, conic-globose; seeds 10–50 in each cell, small, 0.5–1.0 mm. diameter.

TYPE SPECIES: ***Freziera undulata* Swartz.**

#### KEY TO THE SPECIES

1. Leaves deeply cordate at base ..... 1. *F. cordata*
1. Leaves rounded, obtuse or cuneate at base, not cordate ..... 2
2. Leaf-base decidedly unequal ..... 3
2. Leaf-base equal or if unequal, hardly perceptible ..... 11
3. Leaf-margin undulate ..... 4
3. Leaf-margin serrulate or subentire, not undulate ..... 5
4. Branchlets, petioles, peduncles and bracteoles covered with a persistent dense yellow-brown villous pubescence .... 2. *F. hirsuta*
4. Pubescent only on very young growth, quickly becoming glabrous ..... 3. *F. undulata*
5. Leaves not over 2 cm. long and 1 cm. wide ..... 4. *F. suberosa*
5. Leaves over 10 cm. long and 4 cm. wide ..... 6
6. Branchlets glabrous or very lightly pubescent; calyx lobes glabrous ..... 7
6. Branchlets covered with a tawny or ferrugineous pubescence; calyx-lobes (outer lobes, at least) pubescent ..... 8
7. Ovary and fruit 3-celled; stigma 3-parted; leaves sessile or if petioled, very slightly so ..... 5. *F. angulosa*
7. Ovary and fruit 5-celled; stigma 5-parted; petioles 1.5–3.5 cm. long ..... 6. *F. Hieronymi*
8. Flowers and fruit borne in fascicles on abbreviated flowering stems of more than a single year's duration . . 7. *F. guatemalensis*
8. Flowers and fruit in simple fascicles lacking a common "peduncle" 9
9. Pedicels short, 2–4 mm. long; ovary and fruit 5-celled; stigma 5-parted ..... 8. *F. macrophylla*
9. Pedicels up to 7 mm. long; ovary and fruit 3-celled; stigma 3-parted ..... 10
10. Petioles 3–4 cm. long; lateral veins 25–30 pairs; bracteoles suborbicular ..... 9. *F. Smithiana*
10. Petioles ca. 1 cm. long; lateral veins up to 20 pairs; bracteoles apiculate ..... 10. *F. inaequilatera*
11. Petioles longest in the genus, 5 cm. long .... 11. *F. Friedrichsthaliana*

11. Petioles not over 3.5 cm. long ..... 12
12. Leaves spatulate, generally rounded at apex .... 12. *F. spathulifolia*
12. Leaves not spatulate ..... 13
13. Leaf-base rounded, truncate or obtuse, not cuneate ..... 14
13. Leaf-base distinctly cuneate and tapering ..... 24
14. Calyx-lobes (not to be confused with bracteoles which may be pubescent) glabrous ..... 15
14. Calyx-lobes and bracteoles densely hirsute, tomentose or sericeous 20
15. Leaves densely tomentose on under surface, very thick 13. *F. longipes*
15. Leaves glabrous, glabrescent or lightly pubescent on under surface, not tomentose; chartaceous to subcoriaceous, not thick ..... 16
16. Petioles 0.5–1.5 cm. long ..... 17
16. Petioles long, 2.5–3.5 cm. .... 18
17. Leaves 20–26 cm. long, 8–9 cm. wide; petioles up to 0.5 cm. long ..... 14. *F. calophylla*
17. Leaves 15 cm. or less long, 5–6 cm. wide; petioles 1.0–1.5 cm. long ..... 15. *F. nervosa*
18. Leaves ca. 6 cm. wide; margin serrulate ..... 16. *F. verrucosa*
18. Leaves extremely wide, up to 10 cm.; margin subentire ..... 19
19. Pedicels 2–3 mm. long; leaves submembranaceous, less than 20 cm. long, obtuse or abrupt and short-acuminate at the apex, 20 or less pairs of veins ..... 17. *F. subintegrifolia*
19. Pedicels 7–10 mm. long; leaves heavy coriaceous, 22–29 cm. long, long-acuminate, 30–35 pairs of veins ..... 18. *F. caloncurea*
20. Ovary and fruit 3-celled; stigma 3-parted ..... 21
20. Ovary and fruit 5-celled; stigma 5-parted ..... 23
21. Flowers and fruit borne in fascicles on abbreviated flowering stems of more than one year's duration ..... 19. *F. lancifolia*
21. Flowers and fruit in simple fascicles lacking a common "peduncle" ..... 22
22. Leaves 4–7 cm. long, 1.5–2.0 cm. wide, pubescent above when very young (later glabrous), densely ferrugineous-tomentose below ..... 20. *F. ferruginea*
22. Leaves 13–17 cm. long, 4.0–8.5 cm. wide, glabrous above, pubescent on midrib below ..... 21. *F. Grisebachii*
23. Branchlets and leaves covered with a rufous-floccose fasciculate pubescence ..... 22. *F. arbutifolia*
23. Branchlets and leaves covered with a simple pubescence 23. *F. reticulata*
24. Calyx-lobes glabrous ..... 25
24. Calyx-lobes pubescent ..... 29
25. Flowers sessile; leaves and branchlets densely rufous-tomentose ..... 24. *F. sericea*
25. Flowers pedicellate; leaves and branchlets glabrous or sparingly pubescent at first, later glabrous ..... 26



26. Plants glabrous throughout (except bracts at base of pedicel); leaves 8–10 cm. long with 30 or more pairs of veins arranged in close succession ..... 25. *F. Wawraii*
26. Branchlets, leaves, petioles and pedicels pubescent at first, later glabrous; leaves 5–9 cm. long with 20 or less pairs of veins ..... 27
27. Leaves up to 10 cm. long, 2.5–3.0 cm. wide ..... 26. *F. Karsteniana*
27. Leaves 3–5 cm. long, 2 cm. or less wide ..... 28
28. Leaves with 15–20 pairs of veins, in strict succession, ca. 1 mm. apart ..... 27. *F. parva*
28. Leaves with 6–9 pairs of lateral veins, laxly arranged and as much as 5 mm. apart ..... 28. *F. euryoides*
29. Flowers sessile ..... 29. *F. tomentosa*
29. Flowers pedicellate ..... 30
30. Flowers and fruit borne in fascicles on abbreviated flowering branchlets of more than a single year's duration ..... 31
30. Flowers and fruit in simple fascicles, lacking a common "peduncle" ..... 32
31. Leaves and branchlets covered with a dense short, erect pubescence, not long, appressed silky; longitudinal striations absent on leaves ..... 30. *F. lanata*
31. Leaves and branchlets covered with a silky sericeous pubescence; longitudinal striations on leaves ..... 31. *F. roraimensis*
32. Flowering parts large for the genus; calyx-lobes 6–7 mm. long, 7–9 mm. wide; petals 11–12 mm. long, 6.0–8.5 mm. wide ..... 32. *F. canescens*
32. Flowering parts normal in size; calyx-lobes not over 3–4 mm. long; petals considerably less than 10 mm. long ..... 33
33. Pedicels up to 5 or 6 mm. long, longer than the calyx-lobes; ovary and fruit globose; pubescence lightly sericeous; veining pronounced on upper surface of leaves ..... 33. *F. candicans*
33. Pedicels 1–3 mm. long, usually shorter than calyx-lobes; ovary and fruit conic; pubescence densely sericeous; veining rather inobscure on upper surface of leaves ... 34. *F. chrysophylla*

1. ***Freziera cordata*** Tulasne in Ann. Sci. Nat. Bot. sér. 3, **8**: 334. 1847. — Choisy in Mém. Soc. Phys. Genève **14**: 112. 1855. — Urban in Bot. Jahrb. **21**: 541. 1896. — Duss, Fl. Phan. Antill. Franç. 96. 1897.

*Eurya cordata* Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. **6**: 190. 1893. — Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, **21**: 149. 1925.

DISTRIBUTION: West Indies (Martinique) and ? Venezuela.

MARTINIQUE: Montagne Pelée, environs du lac des Palmistes, alt. 900–1200 m., *Père A. Duss* 72 (MO, NY, US), 576, 4039, 1882–1899 (arbuste droit, ou tortueux, ou presque sans tige et à branches touchant presque la terre).

VENEZUELA: Maracaibo, *A. Plée s.n.* (TYPE, Paris, Mus d'Hist. Nat.; photo FM).

This species is characterized by the large (up to 13 cm. long and 7 cm. wide), coriaceous, cordate leaves, the veins (ca. 20 pairs) deeply impressed on the upper surface, highly raised on the lower surface. The lateral veins are unusually large. At the base, the midrib is quite thick but decreases in size as it approaches the apex. The veins appear as part of a huge cable (midrib) at the base. As they approach the apex, the veins seem to detach themselves and swing toward the sharply serrate margin.

The comparatively large flowers on short pedicels (2–3 mm.) are nearly obscured by the leaf-auricles. The calyx-lobes, at first covered with a dense fulvous pubescence, become glabrescent, are quite rotundate (6 mm.  $\times$  6 mm.). The five petals are approximately 1 cm. long and the stamens number ca. 15. The ovary is conic-ovate, tapering into the style and finally terminated by a 3-parted stigma.

The type of *F. cordata* was supposedly collected at Maracaibo, Venezuela, by A. Plée. Except for this single collection, all other specimens have been collected from Mt. Pelée on the island of Martinique. The collector and student Père A. Duss gives the impression that the species is endemic to Mt. Pelée. Since A. Plée collected in Martinique as well as several other West Indian Islands, I feel quite certain the type was collected from the same locality visited by Père Duss — which may be tragic — for a brief note on a specimen in the New York Botanical Garden, “cette belle plant a du disparaître sous les laves,” may mean that the whole species was destroyed by the volcanic eruption of Mt. Pelée in 1902.

2. ***Freziera hirsuta*** Smith in Rees, Cyclop. **15**: no. 4. 1810.

*Freziera undulata* var.  *$\beta$  hirsuta* Urban in Bot. Jahrb. **21**: 543. 1896.

DISTRIBUTION: West Indies (St. Vincent, Grenada).

ST. VINCENT: in monte Soufrière, *H. Eggers 6908* (AA, G) January 10, 1890. GRENADA: Mt. St. Catharine, alt. 750 m., *H. Eggers 6189* (AA, US), December 1889 (tree 20 ft. with white flowers). — St. Georges, Grand Etang woods, *W. E. Broadway s.n.* (G, MO, NY).

This species resembles *F. undulata* Swartz in the obovate-oblong leaves (up to 10 cm. long; 2.5–4 cm. wide), the undulate margin and small flowers. Separating it from *F. undulata* and the var. *elegans* is the dense, persistent, yellow-brown, villous pubescence found on the branches, petioles, peduncles and bracteoles.

This species has been recorded as ranging throughout the lesser



Antilles up into Cuba. However, since it has been so often confused with *F. Grisebachii* and *F. undulata*, it seems best to restrict its range until actual specimens representing this species have been examined from the islands formerly recorded.

3. ***Freziera undulata*** (Swartz) Swartz, Fl. Ind. Occ. **2**: 974. 1800. — Willdenow, Sp. Pl. **2**<sup>2</sup>: 1179. 1800. — Smith in Rees, Cyclop. **15**: no. 2. 1810. — De Candolle Prodr. **1**: 524. 1824. — Sprengel, Syst. Veg. **2**: 596. 1825. — Spach, Hist. Nat. Vég. **4**: 65. 1835. — Urban in Bot. Jahrb. **21**: 542. 1896. — Duss, Fl. Phan. Antill. Franç. **97**. 1897. — Boldingh, Fl. Eustatius, Saba and St. Martin, **1**: 134. 1909; Fl. Nederl. West-Indische Eil. 286. 1913.

*Eroteum undulatum* Swartz, Prodr. 85. 1788. — Vahl, Symb. **2**: 61. 1791.

*Eurya undulata* Blume, Mus. Bot. Lugd.-Bat. **2**: 105. 1856. — Szyszlowicz in Engler & Prantl, Nat. Pflanzenfam. III. **6**: 190. 1893.

*Freziera Perrottetiana* Tulasne in Ann. Sci. Nat. Bot. sér. 3, **8**: 332. 1847, fide Urban.

*Freziera salicifolia* Choisy in Mém. Soc. Phys. Genève **14**: 122. 1855.

*Freziera salicifolia* Choisy var. *undulata* (Swartz) Wawra in Fl. Bras. **12**<sup>1</sup>: 283. 1886.

DISTRIBUTION: West Indies (St. Kitts, Guadeloupe, Martinique, Dominica, Trinidad, Saba, Montserrat).

ST. KITTS: *Masson s.n.* (probably ISOTYPE, G). — Mountains above Lamberts, alt. 600 m., *H. Eggers s.n.* (US), Dec. 1882 (high tree). — Upper slopes of Mt. Misery, *N. L. Britton & J. F. Cowell 507* (NY, US), Sept.–Oct. 1901. DOMINICA: in silvis ad Lagunam Roseau, alt. 1000 m., *H. Eggers ed Toepffer 632* (G), Dec. 1881. — Hb. *Hooker s.n.* (NY). TRINIDAD: *Sieber 113* (G, NY). MARTINIQUE: *M. Hahn 119* (G), Feb. 1868. — Bois de la Calebasse et du Champflore, alt. 500–700 m., *Père A. Duss 71, 644, 4040* (NY, US), 1879–1899 (petit arbor élégant). — Bois du Matouba, alt. 600–900 m., *Père A. Duss 2988* (NY, US), 1892, (petit arbor, droit ou tortueux). MONTSERRAT: Gages, near Soufrière, *J. A. Shafer 195* (NY, US), Jan. 23, 1907 (tree 4–5 m. with white fls., “mountain parrot”). SABA: mountains, alt. 800 m., *I. Boldingh 2211B* (NY), 1906.

This species is quite widely distributed throughout the Lesser Antilles. It is closely allied to *F. hirsuta* but is pubescent only on the very young or new growth, quickly becoming glabrous. The flowers are short-pedicellate.

Characterized by oblong-lanceolate or lanceolate, undulate margined leaves, unequal at the base, 5–15 cm. long and 2–4 cm. wide, the veins elevated on the upper surface. Flowers axillary, 2–5 per fascicle.

Pedicels ca. 4 mm., bracteoles obtuse,  $\pm$  1.5 mm. long and wide. Calyx-lobes 5, rounded, subequal, 1.5–2.0 mm. long, ca. 1.5 mm. wide. Petals 5, acuminate, white, 5–6 mm. long. Stamens ca. 20, the filaments 1.0–1.5 mm. long, the anthers 1.2–1.7 mm. long, ovary ovate, 3-locular, attenuated into style. Style 1.5–2.0 mm. long, about equalling the ovary in length, entire, crowned by a 3-parted stigma. Fruit globose or ovoid-conic.

3a. ***Freziera undulata*** Swartz var. ***elegans*** (Tulasne) Krug & Urban in Bot. Jahrb. **21**: 543. 1896.

*Freziera elegans* Tulasne in Ann. Sci. Nat. Bot. sér. 3, **8**: 336. 1847. — Walpers, Ann. **1**: 119. 1848.

*Cleyera elegans* Choisy in Mém. Soc. Phys. Genève, **14**: 110. 1855.

DISTRIBUTION: West Indies (Guadeloupe, Martinique, Dominica).

GUADELOUPE: Lac Flammarion near Soufrière, humid transitional forest, very windy, alt. 1100 m., *H. Stehlé* 460 (NY), April 22, 1936 (very rare); 1517 (US), Feb. 8, 1937. — Savane a Mulets et Savane aux Ananas, alt. 900–1000 m., *Père A. Duss* 3426 (NY, US), 1894 (1.5–2.5 m. tall). MARTINIQUE: Pitons-du-Carbet, montagne Pelée, *Père A. Duss* 644a (NY, US), 1882 (small tree or large bush, rare). DOMINICA: Trois Pitons, *F. E. Lloyd* 756 (NY), 1903.

The variety is characterized by the leaves being smaller, more delicately patterned, elliptic, and narrower than in the type of the species. The leaves are equal or nearly equal at the base, and are seldom over 8 cm. long. In the  $\delta$  flowers the bracteoles are about 1.8 mm. long and 1.5 mm. wide and scarious margined. The five sepals are a little larger, about 2 mm. or more long and nearly as wide, ciliolate. The five petals are quite uniform in size measuring ca.  $6.0 \times 3.5$  mm., acuminate at the apex, involute. The stamens (15–20) have filaments 1.2–1.7 mm. long and anthers 2.1–2.7 mm. long. Both the filaments and anthers are somewhat longer than those found in the species. The ovary is conic-ovate and tapers directly into the style with no point of differentiation. Many ovules are to be found in the three cells of the ovary, which, as far as I can see, never develops. Urban suggests that the  $\delta$  flowers drop soon after the pollen is developed. The stigma is closed rather than spreading as in the  $\varphi$  flowers and lacks a papillose, stigmatic surface.

The  $\varphi$  flowers are similar to the  $\delta$  flowers except that the staminodia are undeveloped, with hardly any distinction between filament and anther. The ovary tapers into the style which is crowned by a 3-parted stigma.

4. **Freziera suberosa** Tulasne in Ann. Sci. Nat. Bot. sér. 3, 8: 330. 1847. — Triana & Planchon, op. cit., sér. 4, 18: 264. 1862.

*Eurya suberosa* (Tul.) Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III, 6: 190. 1893. — Melchior in Engler & Prantl, op. cit., ed. 2, 21: 149. 1925.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. Tolima, Andes Mts., *J. Goudot s.n.* (photo and fragment of TYPE, FM), 1844.

*Freziera suberosa* is characterized by a hirsute, fissured, corky bark. The leaves are small ( $2.5 \times 1.0$  cm.), elliptic-oblong, widely revolute, obtuse at the apex, unequal at the base, glabrous above (even when young) except for the midrib which is tawny pubescent nearly the whole length, densely sericeous below; the petiole scarcely 2 mm. long, hirsute.

Since only a fragment of leaves and branchlets were available for study, the description of flower and fruit of the original author must suffice. The ♀ flowers axillary very often solitary, large, the peduncles long, hirsute; bracteoles subopposite, coriaceous, hirsute, keeled on the dorsal surface, fulvous; calyx-lobes 5, ovate-rotundate, coriaceous, concave, fulvous, 7–8 mm. long and 5–7 mm. wide; petals 5, glabrous ovate-rounded, imbricate in bud; staminodia 15–18 in a single series glabrous; ovary conical, 3–4 celled, glabrous, tapering into a short rigid style, which is terminated by 3 or 4 stigmas. Fruit globose, conic.

The very small leaves separate this species from all other known species of the genus. Tulasne and also Triana & Planchon compare the leaves of this species to those of *Buxus sempervirens*. The flowers are very large for the genus. The species must be rare. It seems, judging from the material deposited in American herbaria, to have been collected only once.

5. **Freziera angulosa** Tulasne in Ann. Sci. Nat. Bot. sér. 3, 8: 332. 1847.

*Eurya angulosa* (Tul.) Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III, 6: 190. 1893. — Melchior in Engler & Prantl, op. cit. ed. 2, 21: 149. 1925.

DISTRIBUTION: South America (Bolivia).

BOLIVIA. Dept. La Paz: Vicinity of Coroico, *Pentland* 105 (photo of type, FM), 1839. — Mapiri, *A. M. Bang* 1489 (AA, G, MO, NY, US), July–Aug. 1892. — Mapiri, alt. 600 m., *G. H. H. Tate* 476 (NY), Mar.–Apr. 1926. — Copacabana, about 10 km. south of Mapiri, alt. 850–950 m., *B. A. Krukoff* 11035 (AA, NY), Oct.–Nov. 1939 (tree 24 m.). — Valley of Tipuani, *H. A. Weddell s.n.* (FM) 1851. — Ticunhuaya, alt. 1500 m., *G. H. H. Tate* 1105 (NY), Apr. 1926.

Branchlets angled, pubescent at first, later glabrous, leaves elliptic-oblong, coriaceous, 10–20 cm. long, 4–7 cm. wide, acuminate at apex, decidedly unequal and rounded at base, subsessile, shining, glabrous (pubescent below, at first), the margin lightly serrulate, the veins prominent on both surfaces. Flowers 4–6-fasciculate, axillary; pedicels very short (1–2 mm.), sericeous; bracteoles 2, deltoid, sepaloïd, ca. 2.5 mm. long and wide, pubescent; calyx lobes 5, imbricate, concave, suborbicular, glabrous, ca. 4 mm. long and 3 mm. wide, the margin scarious; petals 5, ca. 6 mm. long, unequal, width 3–5 mm.; stamens ca. 20, ca. 3.5 mm. long, the filaments 2 mm. long, the anthers linear, flat, 1.5 mm. long; ovary conic, tapering into brief style, 3-celled, multi-ovulate. Fruit globose, 5–6 mm. diam., 3-celled, many-seeded.

Like *F. Hieronymi*, this species is characterized by glabrous, angled branchlets, soon becoming terete. Also, in both species, the leaves are unequal at the base, more pronounced in *F. angulosa*. However, in *F. Hieronymi* the leaves are long-petioled (1.5–2.0 cm.) while in this species the leaves are sessile, or, if petioled, very slightly so.

For some unknown reason, most herbarium material of this species has been identified as *F. subintegrifolia* and as such has generally been known. Whereas the leaves in this species are sessile or subsessile, the leaves in *F. subintegrifolia* are long-petiolate (2.5–3.0 cm. long), and much wider (up to 10 cm.). These two characters will immediately separate the two.

6. **Freziera Hieronymi** Kobuski in Ann. Missouri Bot. Gard. **25**: 355. 1938.

*Eurya nitida* Hieronymus in Bot. Jahrb. **20**, Beibl. **49**: 50. 1895. — Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, **21**: 149. 1925. — Non Korthals (1840).

DISTRIBUTION: South America (Colombia).

COLOMBIA: Prov. Antioquia, between Yolombó and Cancan, alt. 1500–2000 m., *F. C. Lehmann CCXVIII* (isotype of *Eurya nitida* Hieronymus, US; photo of Berlin type, G, FM), Sept. 1884. — Exact locality missing, *J. C. Mutis 4445* (US), *4600* (US), *4625* (FM, US).

Because of the existence of an earlier homonym, *Eurya nitida* Korthals (1840), a new name, *Freziera Hieronymi* was used when the transfer to *Freziera* was made in 1938. At that time, the name was erroneously recorded "*Hieronyma*" instead of *Hieronymi* as listed above.

This species is characterized by glabrous young branchlets, angled and narrowly subulate at first, finally becoming subterete. Leaves oblong-ovate, coriaceous, ca. 13–14 cm. long and 6–7 cm. wide, abruptly acumi-



nate at the apex, unequal and subrotund at the base, the margin serrate, the veins raised and reticulate on both surfaces, shining and glabrous above, pubescent on the veins below; petiole 1.5–2.0 cm. long, canaliculate, winged.

Flowers axillary, the fascicles 2–5-flowered, shortly pedicellate (1–2 mm. long, sericeo-pubescent to subglabrous), the bracteoles 2, suborbicular, ca. 2 mm. long, glabrous, the calyx-lobes 5, orbicular, ca. 2.5 mm. long, glabrous. According to Hieronymus (herbarium material in bud of fruit), the petals are crassulate, ovate, ca. 4–5 mm. long, glabrous, the stamens 10, with the anthers a trifle shorter than the filaments, the ovary glabrous, conic-ovoid 5-loculate, attenuated at the apex into a short style topped by a 5-parted stigma.

This species can be separated from *F. nervosa* by the angled, winged young branchlets, the 5-celled ovary, and the shining, coriaceous leaves.

*Mutis* 4625 varies from the other specimen in having ovate-lanceolate leaves.

7. ***Freziera guatemalensis*** (Donn. Sm.) Kobuski in Ann. Missouri Bot. Gard. **25**: 354. 1938.

*Eurya guatemalensis* Donnell Smith in Bot. Gaz. **46**: 109. 1908. — Standley in Publ. Field Mus. Nat. Hist. Bot. Ser. **8**: 317. 1931.

DISTRIBUTION: Central America (Guatemala, Republic of Honduras).

GUATEMALA: Dept. Alta Verapaz, Coban, alt. 1350 m., *H. von Tuerckheim* II 1824 TYPE (FM, G, MO, NY, US), June 1907. — Dept. San Marcos, near Finca El Porvenir, alt. 1400–1700 m., *J. A. Steyermark* 37049, 37272 (FM), Mar. 1–8, 1940 (flowers creamy; “durazno de monte”). HONDURAS: in forest near the summit of the range above El Alchote, in cloud zone, above the plains of Siguatepeque, alt. 1800 m., *T. G. Yuncker, R. F. Dawson & H. R. Youse* 6161 (FM, MO, NY, US) July 28, 1936 (small tree 4.5 m.; fls. white, fleshy; leaves shiny green above, brown-wooly beneath).

This species is characterized by Donnell-Smith as having lanceolate leaves, shining above, ferrugineous-tomentose beneath, acuminate at the apex, unequal, acute or subacute at the base, the margin entire. The flowers pedicellate, in fascicles, on a common peduncle. This applies very well for the type. However, later collections (*Steyermark* 37049 and 37272) show the margins to be serrulate as well as entire, and the tomentose pubescence to be tawny, as well as ferrugineous.

The two nearest relatives are *F. candicans* and *F. lancifolia*. *Freziera candicans*, like *F. guatemalensis*, possesses both entire and serrulate

leaves but it lacks the abbreviated peduncle in the inflorescence, has an equilateral leaf-base and a conspicuous, more delicate pattern of veining on the upper surface of the leaf. *Freziera lancifolia*, also like *F. guatemalensis*, has the abbreviated "flowering branch" or common peduncle. This is not as well developed in the latter species but careful examination shows an initial development. However, *F. lancifolia* differs from *F. guatemalensis* in having the under surface of the leaves nearly glabrous, a rounded and equilateral leaf-base and the pedicels considerably longer.

8. ***Freziera macrophylla*** Tulasne in Ann. Sci. Nat. Bot. sér. 3, 8: 330. 1842.

*Eurya macrophylla* (Tul.) Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893. — Melchior in Engler & Prantl, op. cit., ed. 2, 21: 148. 1925.

DISTRIBUTION: Mexico (Oaxaca).

OAXACA: Locality lacking, *D. Franco s.n.* (photo of type, FM), 1842. — Teotalongo, *C. Liebmann 337*, in part (FM, US), Nov. 1842.

*Freziera macrophylla*, rightfully named because of its large leaves, reaches the northernmost range on the American continent. No other species of *Freziera*, except those in the West Indies, extends so far north. Besides the type, one other collection *Liebmann 337*, in part, has been collected in Oaxaca. About this latter number, there is some uncertainty. The uncertainty lies in the collector's number, not in the species. In several herbaria, are representatives of *Liebmann 337* which belong to *Cleyera cernua* supposedly collected at La Lagune in August 1842. *Liebmann 337* cited here under *Freziera macrophylla* is questionably labeled "?Teotalongo 11.42."

Branchlets and leaves (under surface) are covered with a very short, appressed, tawny pubescence. The leaves are linear-oblong, 20–25 cm. long and 5–6 cm. wide, acuminate at the apex, rotund and unequal at the base, glabrous above (except for a line of tawny pubescence extending along the entire midrib), short appressed tawny pubescent below, the primary veins sharply elevated below, 20–25 pairs, the margin plane, serrate, the petiole winged, about 1 cm. long, pubescent. Flowers axillary, fasciculate (4–6), shortly pedicellate (2–4 mm.), the bracteoles broadly ovate, ca. 1.5 mm. long, obtuse at the apex, pubescent, coriaceous; calyx-lobes 5, suborbicular, imbricate, coriaceous, 3–4 mm. long, the outer lobes pubescent on the dorsal surface, the inner ones glabrous; petals 5, glabrous, imbricate in the bud, broadly ovate to ovate-oblong, twice as long as the calyx-lobes; stamens ca. 15 (not seen), unequal, adnate to the base of the corolla. According to Tulasne, the ovary is glabrous, 5-celled, the fruit is globose, 5-celled, multi-ovulate.

9. **Freziera Smithiana**, sp. nov.

Arbor ramulis teretibus brunnescentibus hornotinis dense fulvo-pilosulis, probabiliter mox glabrescentibus. Folia oblongo-ovata, coriacea, 20–24 cm. longa et 6.0–8.5 cm. lata, supra glabra (juventate fulvo-pubescentibus), subtus pubescentia, apice abrupte acuminata, basi subrotundata, distincte inaequalia, costa supra canaliculata, subtus ca. 3 mm. elevata, venis lateralibus 25–30 paribus undique prominentibus reticulatis margine serrulata, petiolis 3–4 cm. longis pubescentibus, alatis involutis. Flores axillares, 5–7-fasciculati; pedicelli fulvo-pubescentes, ad 7 mm. longi, apice bracteolis 2 oppositis sepaloideis suborbicularibus concavis dense fulvo-sericeis ca. 3 mm. longis latisque; sepala 5, imbricata, inaequalia, subrotundata, concava, dense hirsuta, exterioribus 5–6 mm. longis et ca. 5 mm. latis, margine anguste scariosis, interioribus ca. 6 mm. longis et ca. 5 mm. latis, margine 1.5 mm. scariosis; petala 5, imbricata, inaequalia, ca. 9 mm. longa et 6–7 mm. lata, apice subrotundata; stamina ca. 25, uniseriata, 3–4 mm. long, filamentis ca. 1 mm. longis claviformibus, antheris linearibus ca. 3 mm. longis apiculatis; ovarium (♂ fl.) ca. 5 mm. longum, basi 2 mm. diam., ad apicem attenuatum, tri-loculare, multo-ovulatum. Fructus ignotus.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. Santander, vicinity of Las Vegas, Eastern Cordillera, in thickets, alt. 2600–3000 m., *E. P. Killip & A. C. Smith 15915* (AA, TYPE; G, NY, US), Dec. 1926 (tree).

The leaves of this species are very distinctive. Such features as the large size, the large number of showy lateral veins, the cross reticulations on the under surface, the tawny pubescence on both surfaces when very young, the long sturdy petiole and the difference of 8–10 mm. of the leaf-sides at the base cause this species to stand out from all others. The dense tawny pubescence on the pedicel, bracteoles and calyx, all are features of distinction. The absence of lenticels on the branchlets is an unusual feature. No pistillate flowers or fruit were available for study.

This species is named for Dr. A. C. Smith of the Arnold Arboretum Staff. He participated in the collection of the type specimen and early recognized the species as new.

10. **Freziera inaequilatera** Britton in Bull. Torrey Bot. Club 16: 63. 1889.

*Eurya inaequilatera* (Britton) Melchior in Engler & Prantl, Nat. Pflanzenfam, ed. 2, 21: 149. 1925.

*Eurya inaequalifolia* Lingelsheim in Rep. Spec. Nov. 7: 111. 1909. — Melchior in Engler & Prantl, l.c. — Syn. nov.



*Freziera inaequalifolia* (Lingelsh.) Kobuski in Ann. Missouri Bot. Gard. 25: 354. 1938.

DISTRIBUTION: South America (Bolivia).

BOLIVIA. Dept. La Paz, Prov. Larecaja: Mapiri, alt. 750 m., *H. H. Rusby* 2467, TYPE (G, MO, NY, US), May 1886.—Mapiri Region, San Carlos, alt. 750 m., *O. Buchtien* 1998 (isotypes of *Eurya inaequalifolia* Lingelsheim, NY, US), Sept. 1907; *O. Buchtien* 1652 (G, NY), 1653 (FM, US), March 29, 1927 (tree 8 m.).—Copa-cabana, about 10 km. south of Mapiri, alt. 850–950 m., *B. A. Krukoff* 11044 (AA, NY), Oct.–Nov. 1939 (tree 18 m.).

Trees with branchlets ferrugineous tomentose at first, later glabrescent. Leaves coriaceous, elliptic-lanceolate, (12–)16–20 cm. long, 4–6 cm. wide, sparsely pubescent above (especially on lower-half of midrib), ferrugineous tomentose below, acuminate at apex, rounded and unequal at base, margin serrulate, lateral veins (ca. 20 pr.) prominent below; petiole 1 cm. long, tomentose, winged. Flowers axillary, fascicles 3–7-flowered; pedicels tomentose, varying lengths, up to 7 mm. long; bracteoles 2, deltoid, 3.0–3.5 mm. long, 3.5–4.0 mm. wide, tomentose, concave, pergamentaceous, apiculate; calyx-lobes 5, imbricate, subrotund, concave, pergamentaceous, ca. 5 mm. long, 4–5 mm. wide, outer 2 tomentose on entire dorsal surface, inner 3 tomentose only in center of dorsal surface, margins glabrous, membranaceous; petals 5, imbricate, ca. 6 mm. long, 3 mm. wide at base, tapering toward apex, lower half membranaceous, upper half hard, somewhat sepeloid in texture; stamens 20+, ca. 3 mm. long, filaments ca. 1.5 mm. long, thick, attenuated at point of union with anther, the anthers somewhat hastate, apiculate; ovary glabrous, conic, tapering into style, ca. 3 mm. long, 3-celled, multi-ovulate. Fruit globose, 5–7 mm. diam., many-seeded.

As the name suggests, the outstanding characteristic of this species is the unequal sides of the leaves. At the base, there is a variation of as much as 5 mm., making the leaf appear (1.5–2.0 cm.) more greatly petiolate than is actually (1.0–1.5 cm.) the case. This character plus the very dense ferrugineous tomentose pubescence on the branchlets, leaves, pedicels, bracteoles and calyx are the major gross characters which separate this species from *Freziera subintegrifolia*, its nearest relative.

11. ***Freziera Friedrichsthaliana*** (Szyszylowicz) Kobuski in Ann. Missouri Bot. Gard. 25: 354. 1938.

*Eurya Friedrichsthaliana* Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893.—Melchior in Engler & Prantl, op. cit. ed. 2, 21: 148. 1925.

DISTRIBUTION: Central America (Guatemala, Nicaragua).

GUATEMALA: Exact locality missing, *Friedrichsthal* 996 (TYPE, Berlin; photo and fragment, FM). NICARAGUA: exact locality lacking, *G. Wright s.n.* (G, US), 1853–1856. — Summit of Mt. Mombacho, near Grenada, in meadow in rain-forest, alt. 1600 m., *V. Grant* 808 (AA), Dec. 24, 1940 (spreading tree 8 m. high with white flowers).

The only references made to this species seem to be in the two keys in Engler & Prantl's, *Nat. Pflanzenfam.*, first by Szyszylowicz in 1893 and later, in the second edition by Melchior (1925). A complete description follows: Trees or shrubs with strong vigorous glabrous reddish brown branchlets, in very young stage somewhat pubescent. Leaves unusually long-petiolate with the petioles 4–5 cm. long, glabrous, lightly winged on dorsal side; the leaf-blades (10–)14–16 cm. long giving an overall measurement of 18–21 cm. long, 5–7 cm. wide, subcoriaceous, ovate, glabrous (pubescent while unfolding), acuminate at apex, obtusely cuneate at base, delicately patterned on undersurface with many (25+) pairs of reddish lateral veins and cross veins, the margin sharply serrate. Flowers axillary, 3–5-fasciculate; pedicels ca. 5 mm. long, hirsute, glabrous, 3 mm. long; calyx-lobes 5, imbricate glabrous, pergamentaceous, suborbicular, ca. 4 mm. long, 3.5–4.0 mm. broad, concave; petals 5, imbricate, 6 mm. long, 4 mm. at middle, tapering to 1–2 mm. at apex, membranaceous at base, somewhat brittle and subinvolute at apex; ovary glabrous, conic, ca. 2 mm. long, 3-celled, multi-ovulate, tapering into very short (0.5 mm.) style, surrounded at base by a single series of staminodia; stigma 3-parted. Fruit globose, glabrous, 5 mm. diam., many-seeded.

This species stands alone because of its long petiole (5 cm.), probably, by far, the longest in the genus. The sharp serration of the leaf is another feature which makes it unusual.

12. ***Freziera spathulifolia*** (Melchior) Kobuski in *Ann. Missouri Bot. Gard.* **25**: 335. 1938.

*Eurya spathulifolia* Melchior in Engler & Prantl, *Nat. Pflanzenfam.* ed. 2, **21**: 149. 1925.

DISTRIBUTION: South America (Peru).

PERU: Precise locality lacking, *A. Weberbauer* 3423 (photo of type, AA, FM, G).

This species can easily be recognized by the distinctly spathulate leaves, rounded or obtuse at the apex and tapering gradually at the base. This type of leaf is most unusual in the genus. Melchior (1925) merely

recorded this species as new in Engler & Prantl (l.c.), and except for his notes in a key, no description has ever been published. The following description is compiled from a photograph of the type.

Tree or shrub; branchlets pubescent at first, later glabrescent. Leaves coriaceous, oblong-spathulate, 5.0–7.5 cm. long, 2.0–2.7 cm. wide, rounded or obtuse at apex, tapering gradually at base into a broadly winged petiole (1.5–1.7 cm. long) or perhaps, according to interpretation, a petiole 2–3 mm. long, glabrous, shining above, pubescent below (pubescence appears quite dense in photograph), the margin serrulate. Flowers axillary, in fascicles of 1–4; pedicels 3–4 mm. long, appear to be pubescent; bracteoles 2, suborbicular, sepaloïd, ca. 1.5 mm. long, appear to be pubescent; calyx-lobes 5, imbricate, suborbicular, appear to be glabrous; petals 5, ca. 5–6 mm. long, tapering at apex; stigma (attached to fruit) 3-parted; ovary 3-celled (assumption drawn from stigma). Fruit globose, glabrous, 5–6 mm. diameter.

13. ***Freziera longipes*** Tulasne in Ann. Sci. Nat. Bot. sér. 3, 8: 327. 1847. — Triana & Planchon, op. cit. sér. 4, 18: 264. 1862.

*Lettsomia longipes* (Tulasne) Choisy in Mém. Soc. Phys. Genève 14: 123. 1855.

*Eurya longipes* (Tulasne) Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893. — Melchior, op. cit. ed. 2, 21: 149. 1925.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. Cundinamarca, Salto de Tequendama, *J. Goudot s.n.* (TYPE, Herb. Mus. Paris; photo FM). — Locality dubious, *Bro. Ariste-Joseph B-142* (US), 1921. — Dept. Magdalena, Sierra de San Lorenzo, dry forest, alt. 2100 m., *H. H. Smith 1753* (NY), Mar. 10, 1899.

*Freziera longipes* is characterized by large, thick, ovate leaves measuring up to 15 cm. long and usually 7–8 cm. wide with a long petiole which measures 3 cm. and is up to 4 mm. thick. The leaf-base is rounded or obtuse. The pubescence on the under surface of the leaf is so lanuginose that the serrulate margin appears entire. The flowers are large and sessile in the axils of the leaves. The calyx-lobes are glabrous, subrotund, ca. 7–8 mm. long and wide. The petals are large, about twice as long as the calyx-lobes. The ovary is five-celled.

The species can be separated from *F. tomentosa*, its nearest relative, by wide, thick-petioled leaves, rounded or broadly obtuse at the base, larger flowers, and glabrous calyx-lobes. *Freziera tomentosa* has sericeous calyx-lobes, which appear as though they might become glabrescent, much narrower leaves tapering at both ends, and more slender petioles.

14. **Freziera calophylla** Triana & Planchon in Ann. Sci. Nat. Bot. sér. 4, 18: 261. 1862.

*Eurya calophylla* (Tr. & Pl.) Szyszyłowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893. — Melchior in Engler & Prantl, op. cit., ed. 2, 21: 149. 1925.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. Antioquia, San Julian, in forest, alt. 1800 m., *J. Triana s.n.* (photo of type, FM).

Since only a photograph of the type is available for studying this species, one must depend almost entirely on the original description for details. The species is very outstanding and should be recognized by the leaf characters alone. The authors state that the specimen comes from a beautiful tree of medium height which is glabrous. While these authors are usually very careful in mentioning pubescence, and no mention is made of pubescence throughout the entire description, yet Melchior (l.c.) in his key intimates that the under side of the leaf is thick silky-pubescent and also that the calyx is pubescent. Examining the photograph with a hand lens one is inclined to discredit Melchior's observations.

The leaves appear oblong-elliptic, chartaceous, are 20–25 cm. long, 8–9 cm. wide, glabrous, short-pointed at the apex, subrotund at the base, tapering into a short petiole (ca. 5 mm.), the margin serrulate; the midrib above is flat, the veins below are prominent and reticulate. Only staminate flowers were seen by the authors. They remark that the flowers are axillary, fasciculate, very shortly pedicellate, the corolla longer than the calyx, the stamens about 30, the ovary 3–5-celled, conical, tapering through the style to the stigma which they mention as 3–5-dentate.

15. **Freziera nervosa** Humboldt & Bonpland, Pl. Aequin. 1: 31, t. 9. 1808. — Smith in Rees, Cyclop. 15: no. 8. 1810. — De Candolle, Prodr. 1: 525. 1824. — Sprengel, Syst. Veg. 2: 596. 1825. — Spach, Hist. Veg. 4: 65. 1835. — Triana & Planchon in Ann. Sci. Nat. sér. 4, 18: 262. 1862.

*Eurya nervosa* (H. & B.) Szyszyłowicz in Engler & Prantl, Nat. Pflanzenfam. III, 6: 190. 1893. — Hieronymus in Bot. Jahrb. 20, Beibl. 49: 49. 1895.

*Eurya Lehmannii* Hieronymus in Bot. Jahrb. 20, Beibl. 49: 49. 1895. — Syn. nov.

*Freziera Lehmannii* (Hieronymus) Kobuski in Ann. Missouri Bot. Gard. 25: 354. 1938. — Syn. nov.

DISTRIBUTION: South America (Colombia).



COLOMBIA: Dept. Nariño, vicinity of Pasto, *A. Bonpland* s.n. (fragment of type, FM). — Dept. El Cauca, dense damp forests in highlands of Popayán, alt. 1600–2200 m., *F. C. Lehmann* B.T.427 (AA, G, NY), 4777 (isotype of *Eurya Lehmannii* FM, G, US), 4449 (FM), 7879 (FM, US). — Dept. El Cauca, Popayán, alt. 1760 m., *E. Pérez Arbelde* & *J. Cuatrecasas* 6035 (US), July 13, 1939 (large tree).

*Freziera nervosa* is characterized by membranaceous or submembranaceous leaves, glabrous above, pubescent below, with many pairs of conspicuous lateral veins. The flowers are axillary in fascicles up to seven; pedicels hirsute, 5–8 mm. long; bracteoles deltoid, sepaloïd, unequal, 1.2–1.5 mm. long and as broad, pilose on the dorsal surface; calyx-lobes 5, small, 2.5–2.7 mm. long and nearly as broad, glabrous, concave, subrotund, scarious-margined and ciliolate; petals 5, ca. 5 mm. long and 2.5–4.0 mm. wide at the base, tapering to less than 1 mm. at the subinvolute apex, the lower half membranaceous, the upper half somewhat thicker; ovary glabrous, ovoid, ca. 2 mm. long, tapering in a short style less than 1 mm. long which is topped by a three-parted spreading stigma nearly 0.5 mm. long and wider than that of other species of *Freziera*.

Hieronimus separated *Eurya Lehmannii* from *F. nervosa* as follows: "Species *E. nervosae* (Humb.-Bonpl.) Szysz. affinis, differt ramulis novellis, petiolis, pedicellis indumento obtectis, petiolis paulo longioribus, floribus paulo majoribus etc." *Freziera nervosa* is pubescent on the young branchlets, petioles and pedicels. There is a variation in degree of pubescence but hardly enough to warrant specific delimitation. Also, the small variation in size of petioles and flowers mentioned by Hieronymus is negligible.

The only difference I can note is a smaller number of veins present in the leaves, which are, perhaps, a little more rotund at the base.

16. ***Freziera verrucosa*** (Hieronimus) Kobuski in Ann. Missouri Bot. Gard. **25**: 355. 1938.

*Eurya verrucosa* Hieronymus in Bot. Jahrb. **20**, Beibl. **49**: 51. 1895. — Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, **21**: 149. 1925.

DISTRIBUTION: South America (Ecuador).

ECUADOR: Prov. Azuay, western slope of the West Andes of Cuenca, in dense forests around Yerba-buenas and Molleturo, alt. 2400–2800 m., *F. C. Lehmann* 5656 (TYPE, Berlin; isotypes FM, G, US) (tree to 10 m. with large, close crown; leaves thick, robust, almost leathery, shiny with brown petioles and veins; flowers yellow-white.) — Prov. Chimborazo, Riobamba, outer slopes of Western Cordillera, alt. 2500 m., *A. Rimbach* 73 (AA), Nov. 1931, 121 (AA, FM, NY, US), Feb. 22, 1932 (middle-

sized forest tree; bark rather smooth, light gray with white lenticels; flowers small, faintly scented, corolla white; vernacular name "huishcaparun").—In Andes, *R. Spruce* 5032 (NY), 1857–1859. — Prov. Tungurahua, *H. Sydow* 533 (US), Dec. 14, 1937.

This species is characterized by coriaceous ovate leaves up to 18 cm. long and 6 cm. wide, scattered silky-pubescent on the under surface, later glabrescent, glabrous above, long-petioled (2–3 cm.). Flowers axillary, 3–8-fasciculate, the pedicels pubescent, 7–10 mm. long; bracteoles 2, usually close to calyx-lobes and simulating them (occasionally 1 bracteole found lower on pedicel in *Rimbach* 121); calyx-lobes 5, imbricate, suborbicular, ca. 4 mm. long, 4–5 mm. wide, concave, glabrous; petals 5, white, 9 mm. long, 4–5 mm. wide at base, tapering toward involute apex, lower third lighter in color and texture; staminodia 25–30, ca. 3 mm. long; ovary globose, ca. 4 mm. long, 5-celled, many-ovuled, the style 1.5–2.0 mm. long, the stigma distinctly 5-parted, each branch nearly 1 mm. long. Fruit not seen.

*Freziera verrucosa* is most closely allied to *F. Hieronymi* and *F. subintegrifolia*. All three are characterized by shining, ovate, glabrous leaves with long (2–3 cm.) petioles. From both species *F. verrucosa* can be separated by the glabrous, long-pedicelled (up to 10 mm.) flowers. In both of the other species the pedicels are very short, glabrous in *F. Hieronymi* and pubescent in *F. subintegrifolia*. *Freziera verrucosa* and *F. Hieronymi* have coriaceous, serrulate and less broadly ovate leaves (not over 6 cm. wide), while *F. subintegrifolia* has membranaceous, entire or subentire and more broadly (up to 10 cm.) ovate leaves.

The leaves of the type of this species are less silky-pubescent, and generally shorter than the two specimens collected by Rimbach. As a result, the Rimbach numbers appear to represent a distinct species. However, on close examination, the constant flower characters prove to be the same and the leaves present no really stable characters for separation.

17. ***Freziera subintegrifolia*** (Rusby) Kobuski in Ann. Missouri Bot. Gard. **25**: 355. 1938.

*Eroteum (Erotium) subintegrifolium* Rusby in Mem. Torrey Bot. Club **3**, no. 3: 9. 1893.

*Eurya subintegrifolium* (Rusby) Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, **21**: 149. 1925.

DISTRIBUTION: Bolivia.

BOLIVIA: Yungas, *A. M. Bang* 496 TYPE (FM, G, MO, US), 1890.

This species is represented only by the single collection cited. The leaves are outstanding because of the extreme width (up to 10 cm.), the

long petioles (2.5–3.0 cm. long), the truncate or rounded base and the nearly entire margin. In addition, the leaves appear somewhat membranaceous, and are sparsely pubescent (close-lying, white, fine, silky) when young, later becoming glabrous. The very short pedicels (2–3 mm. or less), and the bracteoles are pubescent while the calyx-lobes are glabrous and ciliolate.

Closely allied to this species is *F. Hieronymi*, which can be separated by the less broadly ovate leaves (not over 6 cm. wide). These leaves are broadly cuneate and slightly unequal at the base and serrulate on the margin. The pedicels (very short) and all the flower parts are strictly glabrous. The internodes are winged.

*Freziera verrucosa* belongs with these species but can be quickly separated from both by the long-pedicelled (up to 10 mm.) flowers. These pedicels add strikingly to the appearance of the species considering the fact that up to 8 flowers are often found in a single fascicle.

18. ***Freziera caloneura*, sp. nov.**

Arbor parva, 6-metralis, cortice brunneo valde lenticellato rimoso, ramulis brunneis glabris lenticellatis. Folia oblongo-ovata vel ovato-elliptica, coriacea, 22–29 cm. longa et 7.0–10.5 cm. lata, glabra (juventate exceptis), apice abrupte sed longe acuminata, basi aequalia et rotundata, costa supra canaliculata, violacea (fide collectoris), subtus ca. 3 mm. elevata, viridia, venis lateralibus crassis 30–35 paribus undique prominentibus, margine minute serrulata vel subintegra, revoluta, petiolis 3.0–3.5 cm. longis glabris alatis involutis glabris (juventate pubescentibus). Flores ignoti. Fructus globosus, 8–10 mm. diam. (probabiliter immaturus), 5-locularis, multi-seminatus; pedicelli 7–10 mm. longi, glabri, bracteis linearibus 5–8 mm. longis et ca. 3 mm. latis pubescentibus, bracteolis 2, glabris 8–10 mm. longis et 7–8 mm. latis apice subrotundatis, basi contiguis; sepala 5, imbricata, inaequalia, subrotundata, concava, pergamentacea, glabra, ca. 7 mm. longa et lata.

DISTRIBUTION: South America (Bolivia).

BOLIVIA: Dept. Cochabamba, Prov. Chapare, Oncachaca, in forest, alt. 2200 m., *J. Steinbach* 9475 (TYPE AA; isotypes FM, NY), Feb. 28, 1929 (small tree 6 m., leaves dark green, shiny above, the midrib violet above, green below; fruiting calyx and bracteoles brown-violet-green; fruit dark green).

*Freziera caloneura* has several outstanding features which distinguish it from all other species in the genus. The leaves, largest in the genus (22–29 cm. long, 7.0–10.5 cm. wide), surpass both *F. Smithiana* and *F. macrophylla* in length and *F. subintegriifolia* in width. On the under



surface of the leaf, the lateral veins (30 or more pairs), arranged in close succession, swing boldly out and approach close to the margin before breaking toward the apex. The bracts at the base of the pedicel are seldom featured as distinctive. On this species they are linear and measure up to 8 mm. long and 3 mm. wide. The two bracteoles are contiguous or nearly so at the base and encircle the pedicel just below the calyx-lobes. Also, these bracteoles surpass the calyx-lobes in length. This is the only species in which this reversed situation occurs. Unfortunately, no petals or stamens are available for study. One might assume that the petals, when eventually collected, will measure 13–15 (or even more) millimeters. Since the fruit is definitely 5-celled, the stigma is probably 5-parted.

19. ***Freziera lancifolia*** (Standley) Kobuski in Ann. Missouri Bot. Gard. 25: 354. 1938.

*Eurya lancifolia* Standley in Publ. Field Mus. Nat. Hist. Bot. Ser. 8: 317. 1931.

DISTRIBUTION: Central America (British Honduras).

BRITISH HONDURAS: Middlesex, in forest on mountain side, alt. 75–120 m., *W. A. Schipp* 455 (TYPE FM; isotypes AA, G, MO, NY), November 15, 1929 (tall tree 15 m.; wood yellow, close-grained; fruit yellow; rare).—Camp 36, British Honduras, in forest on mountain side, alt. 800 m., *W. A. Schipp* 8–710 (FM), June 26, 1934 (rare tree 18 m. with cream colored flowers).

The important characteristics of this species are: tall tree with reddish brown branchlets pubescent at first, later glabrescent. Leaves with pubescent, lightly winged petiole 1.0–1.5 cm. long; leaf-blade lanceolate, glabrous on upper surface except for midrib, sparsely pubescent below, becoming glabrous except for midrib and principal veins, 10–14 cm. long, 3.0–4.5 cm. wide, acuminate at apex, rounded at base, the margin serrulate. Fruit axillary, in fascicles on abbreviated flowering stem or peduncle, glabrous, subglobose, ca. 7 mm. long, 3-celled, many-seeded; style persistent; stigma occasionally found, 3-parted; pedicel 3–5 mm. long, pubescent; bracteoles 2, sepaloid, suborbicular, sericeous, ca. 1.5 mm. long; calyx-lobes 5, imbricate, suborbicular, sericeous, ca. 3.0–3.5 mm. long.

This species is most closely related to *F. candicans* and *F. guatemalensis*. From the former it can be separated by its glabrous or nearly glabrous lower leaf-surface, rounded leaf-base and abbreviated peduncle. From *F. guatemalensis* it can be separated by the same glabrous under leaf-surface, the serrulate leaf-margin, and the equilateral leaf-base.

Only two collections, both by Schipp in British Honduras, have been recorded.

20. ***Freziera ferruginea*** Wawra in Martius, Fl. Bras. 12<sup>1</sup>: 284. 1886.

*Eurya ferruginea* (Wawra) Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893. — Melchior in Engler & Prantl, op. cit., ed. 2, 21: 149. 1925.

DISTRIBUTION: South America (Peru).

PERU: Dept. San Martín, near Guayrapurima Mt., near Tarapoto, *R. Spruce* 4442 (isotypes, C, FM, NY), August 1856.

Branchlets terete, covered at first with a dense ferrugineous tomentum, later becoming glabrescent. Leaves oblong-ovate, coriaceous, 4–7 cm. long, 1.5–2.0 cm. wide, very young leaves pubescent above at vernation, later glabrous, shining, below covered with the same dense ferrugineous tomentum of branchlets, not becoming glabrous, obtuse pointed at apex, rounded at base, the margin serrulate, the lateral veins (15–20 pairs) impressed above, prominent below even through tomentum; petiole 4–7 mm. long, covered with same thick short ferrugineous tomentum. Flowers, axillary, fascicles 1–3-flowered (according to Wawra, dioecious); pedicels 2–4 mm. long, densely ferrugineous-tomentose; bracteoles minute, ca. 1.0–1.5 mm. long, densely tomentose; calyx-lobes 5, imbricate, concave, pergamentaceous, obtuse or subrotund at apex, ca. 2 mm. long, thickly tomentose on the dorsal surface; petals 5, seemingly free, 3.5–4.0 mm. long, 1.5–2.0 mm. wide, oblong, obtuse at apex, lower half membranaceous, upper half (exposed above calyx-lobes) thicker, simulating texture of calyx-lobes; staminodia none; ovary glabrous, conic to globose, tapering into the style, topped by 3-parted stigma, 2.75 mm. long (over all). Fruit not seen.

This species is outstanding because of its small evenly shaped leaves, covered by a deep ferrugineous tomentum. This tomentum is found also on young branchlets, pedicels, bracteoles and calyx-lobes. The flowers are small, the petals slightly exceeding the calyx-lobes in length and simulating the calyx-lobes in texture on their exposed portion.

21. ***Freziera Grisebachii*** Krug & Urban in Bot. Jahrb. 21: 542. 1896.

*Freziera hirsuta* Grisebach, Cat. Pl. Cub. 36. 1866. — Non Smith (1810).

*Eroteum hirsutum* G. Maza in Anal. Hist. Nat. Madrid, 19: 222. 1890.

*Eurya Griesbachii* Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, 21: 148. 1925.

DISTRIBUTION: West Indies (Jamaica, Cuba).

JAMAICA: Tweedside, below Moody's Gap, alt. 1100 m., *W. Harris* 5658 (iso-syntypes, AA, NY, US), March 19, 1895 (tree 10 m.); same locality, *W. Harris* 6067 (iso-syntypes, NY, US), Nov. 14, 1895 (tree

13 m.). — Same locality, *N. L. Britton* 3380 (NY), Sept. 10, 1908 (tree 15 m.). CUBA: Loma del Gato, Cobre Range of Sierra Maestra, alt. 900–1000 m., *Fre. Leon, Clement & M. Roca* 9920 (NY), July–Aug. 1921 (tree 7–8 m. with large flowers). — Oriente, *C. Wright* 49 (iso-syntypes, G, MO, NY), Dec. 7, 1856 (small tree 6 m. high with white flowers and dark red fruit).

A species closely related to *F. cordata* in size of flower but separated quickly by rounded or obtuse base of leaf. Related to *F. hirsuta* in tomentose pubescence but separated by larger flowers, fruit and leaves.

Trees 10–15 m. with straight, terete rufous-villous branchlets, not geniculate. Leaves distichous, glabrous above; pubescent on midrib below, ovate to oblong-lanceolate, 13–17 cm. long, 4.0–5.5 cm. wide, equal or subequal, rounded or obtuse at base, narrowly acuminate at apex, margin flat, serrate, 15–20 pairs of lateral veins, petiole 1–2 cm. Flowers in axils 2–3-fasciculate, bracteoles semiorbicular, 2–3 mm. long; 3.0–4.5 mm. wide, tomentose. Sepals 5, unequal, 4–5 mm. long, 3.0–4.5 mm. wide, pergamentaceous, tomentose. Petals 5, white, 5–6 mm. long. Staminodia in ♀ fl. uniseriate, ca. 25. Ovary narrowly conic-ovate tapering into a style crowned by 3-parted stigma, 3-celled, multi-ovulate. Fruit ca. 10 mm. long, 6–8 mm. diam., glabrous.

Because of the dense pubescence, this species has been confused with and often cited as *F. hirsuta* Smith. The latter species is not found in Cuba, or, as far as I know, in Jamaica.

22. ***Freziera arbutifolia*** Triana & Planchon in Ann. Sci. Nat. Bot. sér. 4, 18: 262. 1862.

*Eurya arbutifolia* (Tr. & Pl.) Szyszyłowicz in Engler & Prantl, Nat. Pflanzenfam. III. 6: 190. 1893. — Melchior in Engler & Prantl, op. cit., ed. 2, 21: 149. 1925.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. Antioquia, Manzanillo, alt. 2000 m., *J. Triana s.n.* (isotype, NY, photo and fragment, FM). — Dept. Antioquia, between Carolina and Santa Rosa, alt. 2400–2800 m., *F. C. Lehmann CCXXII* (US), Sept. 1884.

Young branchlets densely rufous-pubescent. Leaves elliptic-oblong, coriaceous, 8–12 cm. long, 3–4 cm. wide, rounded or obtuse at apex, rounded at base, serrate, shining above, rufous-pubescent (floccose-fasciculate) on the impressed midrib and veins, more pubescent below, veins prominent; petiole ca. 1 cm. long, canaliculate, pubescent, narrowly margined. Flowers axillary, 1–2-fasciculate; pedicels 1–2 cm. long, densely rufous-pubescent; bracteoles densely pubescent, sub-

orbicular, 2–3 mm. long and broad; calyx-lobes 5, densely pubescent, suborbicular, 4–5 mm. long and broad; petals (not seen) 5, oblong, longer than calyx; stamens ca. 20–30; ovary conic, glabrous, attenuated into a short style, 5-celled, multi-ovulate; stigma 4–5-parted.

This species is closely related to *F. reticulata*, from which it can be separated by the longer pedicelled (1–2 cm.) flowers usually one in the axil, occasionally two, the leaves more nearly elliptic in shape, more obovate than ovate-lanceolate (as in *F. reticulata*), and the unusual floccose-fasciculate pubescence.

23. ***Freziera reticulata*** Humboldt & Bonpland, Pl. Aequin. **1**: 22, t. 5. 1808. — Smith in Rees, Cyclop. **15**: no. 3, 1810. — De Candolle, Prodr. **1**: 525. 1824. — Sprengel, Syst. Veg. **2**: 596. 1825. — Spach, Hist. Nat. Vég. **4**: 64. 1835. — Triana & Planchon in Ann. Sci. Nat. Bot. sér. 4, **18**: 264. 1862.

*Eurya reticulata* Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III, **6**: 190. 1893. Non Korthals (1840).

*Eurya Humboldtiana* Blume, Mus. Bot. Lugd.-Bat. **2**: 105. 1856.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. El Cauca, Almaguer, alt. 2260 m., *Humboldt & Bonpland s.n.* (Herb. Delessert, Genève, TYPE; Mus. Paris, isotype; photo and fragment, FM). — Paramo d' Achupallas, Andes de Pasto et Quindio, alt. 3000 m., *J. Triana s.n.* (NY). — San Pedro, *Fre. Tomás & Daniel 1307* (FM), Dec. 1937 ("cerezo del monte"). — Quindio, *Purdie s.n.* (G).

*Freziera reticulata*, as the name indicates, is characterized by outstandingly reticulate leaves. The veins, noticeably impressed on the upper surface, are sharply elevated below. The cross veins are also raised on the under surface, giving a net-like appearance to the leaf surface. A dense rufous tomentum covers the lower surface of the leaves and, even though thick, coriaceous, and lustrous the upper surface is also pubescent. This latter is an unusual character. A sharp, glandular serrulation further separates this species from its near relative *F. sericea*. The shape of the leaf might be termed wide ovate-lanceolate, up to 17 cm. long and 8 cm. wide, obtusely acuminate at the apex and rounded at the base. The petiole measures as much as 2 cm. long and is densely tomentose, narrowly winged, and involute.

The flowers (according to Humboldt and Bonpland) are white, axillary, and in fascicles up to five. The calyx, bracts and pedicels are densely tomentose. Since most of the specimens were in fruit, no accurate measurements of the corolla could be made from the material



at hand. The calyx-lobes are deltoid, approximately 6–7 mm. long and about as wide. The bracteoles nearly equal the calyx-lobes in size and appear very similar. Both the calyx-lobes and bracteoles are densely tomentose as well as the pedicels which vary in length up to 5 mm.

The fruits of the specimens examined were 5-celled.

- 23A. **Freziera reticulata** Humboldt & Bonpland var. **subintegrifolia** (Hieronymus) Kobuski in Ann. Missouri Bot. Gard. **25**: 355. 1938.

*Eurya reticulata* (H. & B.) Szyszylowicz var. *subintegrifolia* Hieronymus in Bot. Jahrb. **20**, Beibl. **49**: 51. 1895.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. Antioquia, between Carolina and Santa Rosa, alt. 2400–2800 m., *F. C. Lehmann 4068* (US, isotype), Sept. 1884. — Dept. Antioquia, San Pedro, *Bros. Daniel & Tomas 1561* (US), Aug. 1938. — Precise locality lacking, *Bro. Apolinar-Maria 267* (FM).

This variety differs from the species in the narrower leaves (not over 5 cm. wide), the entire or nearly entire leaf-margins, the longer petioles (up to 3 cm.), and the many-flowered fascicles (up to 10, fide Hieronymus).

The pedicels seem shorter than those of the species, many appearing almost sessile. The bracteoles are deltoid, 5–6 mm. long and ca. 4 mm. wide. The calyx-lobes are only slightly larger than the bracteoles, 5.0–6.5 mm. long and 4.0–5.5 mm. wide, obtuse to deltoid. The petals measure ca. 7.5 mm. long and 3–4 mm. wide, are oblong, obtuse to acute at the apex, hardly joined at the base, more membranaceous at the base than nearer the apex. The ovary is conic-ovoid, 4 mm. long, 3 mm. diam., 5-celled, multi-ovulate. The style is almost negligible, while the stigma appears as hardly more than 5 minute deltoid points.

24. **Freziera sericea** Humboldt & Bonpland, Pl. Aequin. **1**: 29, t. 8. 1808. — Smith in Rees, Cyclop. **15**: no. 7. 1810. — De Candolle, Prodr. **1**: 525. 1824. — Sprengel, Syst. Veg. **2**: 596. 1825. — Spach, Hist. Nat. Vég. **4**: 65. 1835. — Triana & Planchon in Ann. Sci. Nat. Bot. sér. 4, **18**: 263. 1862. — Wawra in Martius, Fl. Bras. **12**<sup>1</sup>: 283. 1886.

*Eurya sericea* (H. & B.) Blume, Mus. Bot. Lugd.-Bat. **2**: 105. 1856. — Szyszylowicz in Engler & Prantl, Nat. Pflanzenfam. III. **6**: 190. 1893. — Hieronymus in Bot. Jahrb. **20**, Beibl. **49**: 49. 1895. — Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, **21**: 149. 1925.

DISTRIBUTION: South America (Colombia).

COLOMBIA: Dept. Nariño, Pasto, *A. Bonpland s.n.* (photo of isotype,

FM). — Dept. Antioquia, near Amalfi, alt. 1700–2000 m., *F. C. Lehmann CCXXI* (US); 7878 (FM), Sept. 1884. — Dept. El Cauca, “La Gallera,” Micay valley, forest near Río San Joaquín, alt. 1100–1300 m., *E. P. Killip 7802* (G, NY, US), June 1922 (tree). — Dept. El Cauca, Tetilla mountains near Popayán, alt. 1500–1700 m., *F. C. Lehmann 7693* (FM, G, US) (trees up to 10 m. with large open crowns; trunks rarely over 50 cm. diam.; leaves shiny, yellowish, dark green above, rusty brown pubescent below; flowers yellow-white). — Dept. El Cauca, forests of El Rosario, highlands of Popayán, alt. 1600–1800 m., *F. C. Lehmann B.T.436* (AA, G, NY).

*Freziera sericea* is characterized by a long silky appressed pubescence, (amber-brown in color) on the lower surface of the leaves, the young branchlets and the terminal buds. This pubescence simulates in texture and color that found on *Archboldiodendron*, a theaceous genus indigenous to New Guinea. Also characteristic to both are the longitudinal striations, apparent in the pubescence of the lower leaf surface, presumably caused by the close folds of the leaf in bud. The leaves are elliptic-lanceolate, coriaceous, acuminate, glabrous above, sericeous below, up to 15–16 cm. long and usually up to 4 cm. wide (in one instance wider), sessile or with a petiole shorter than the flower clusters. The flowers are axillary, sessile, the calyx-lobes glabrous. The fruit is 5-celled, many-seeded, and the stigma is 5-lobed.

Closely related are *F. chrysophylla*, *F. longipes*, *F. candicans* and *F. tomentosa*. All these species have the same type of pubescence on the under surface of the leaves, varying in degree and color. One species, *F. chrysophylla*, has even been united as a variety. The various difference between these species and their closest allies will be found discussed under the species in question.

25. ***Freziera Wawrai*** Urban in Bot. Jahrb. **21**: 544. 1896.

*Freziera salicifolia* Wawra in Martius, Fl. Bras. **12**<sup>1</sup>: 283. 1886. Non Choisy (1855).

*Eurya Wawrai* (Urban) Melchior in Engler & Prantl, Nat. Pflanzenfam. ed. 2, **21**: 149. 1925.

DISTRIBUTION: South America (Peru).

PERU: Dept. San Martín, Tarapoto, Campana Mt., *R. Spruce 4359* (iso-syntypes G, NY), August 1856. — Near Tarapoto, in mountains along Mayo river, *R. Spruce 4841* (iso-syntypes, FM, G, NY), July August 1856.

The branchlet terete, glabrous. Leaves subcoriaceous, glabrous, lanceolate to subelliptic, 8–10 cm. long, 2–3 cm. wide, acute at apex,





